G. H. CONDICT.

MACHINE FOR DRESSING OR SURFACING STONE AND OTHER USES.

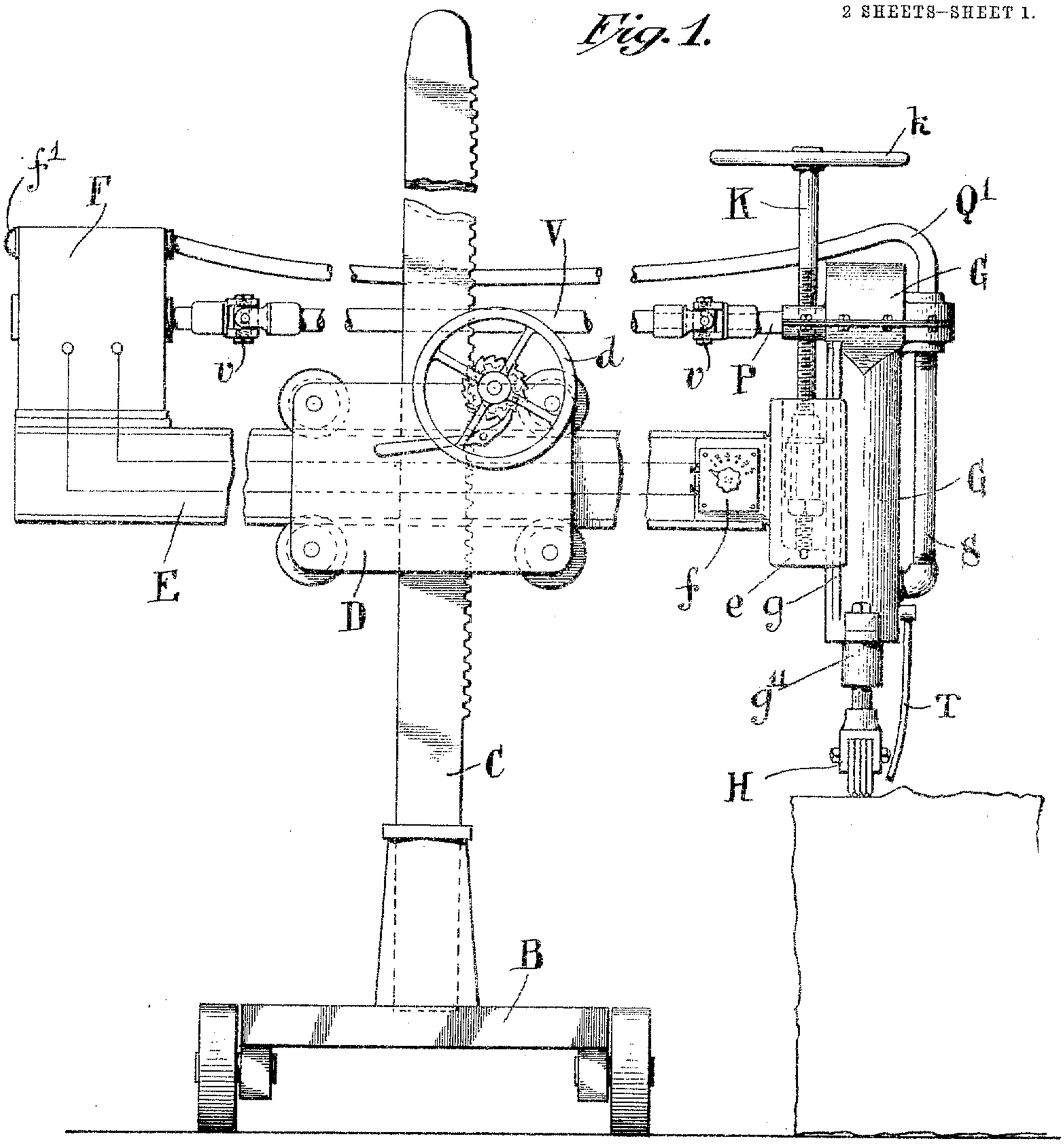
APPLICATION FILED JULY 11, 1908.

990,425.

Patented Apr. 25, 1911.

2 SHEETS—SHEET 1.

Fig. 1.



Attest:

E. Mitchell

E. Van Zandt

George Herbert Condict, Inventor:

by Bonney & Ogden

his Attys

G. H. CONDICT.

MACHINE FOR DRESSING OR SURFACING STONE AND OTHER USES.

APPLICATION FILED JULY 11, 1908.

990,425.

Patented Apr. 25, 1911.

2 SHEETS—SHEET 2.

Fig. 2.

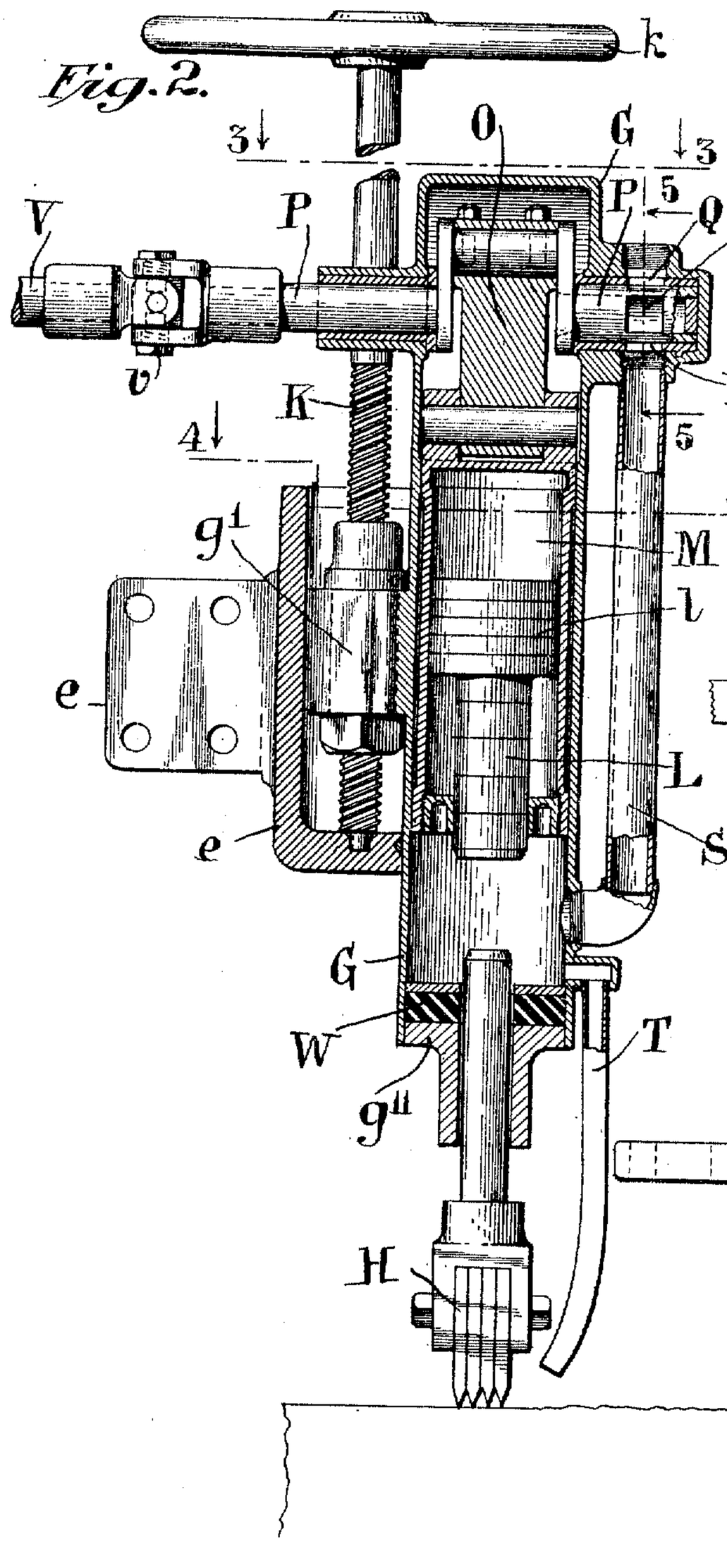


Fig. 5.

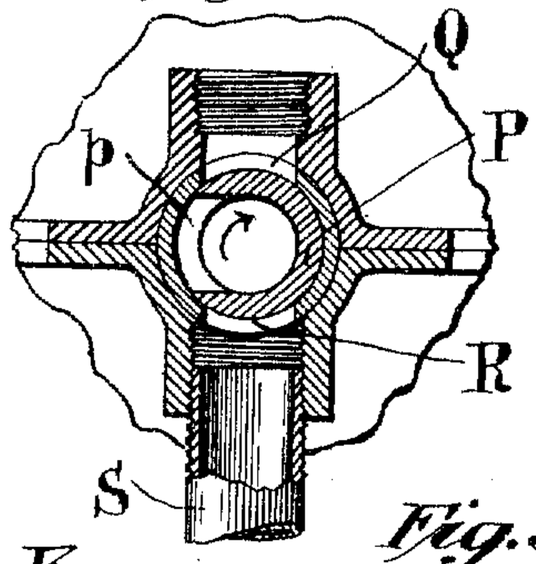


Fig. 3.

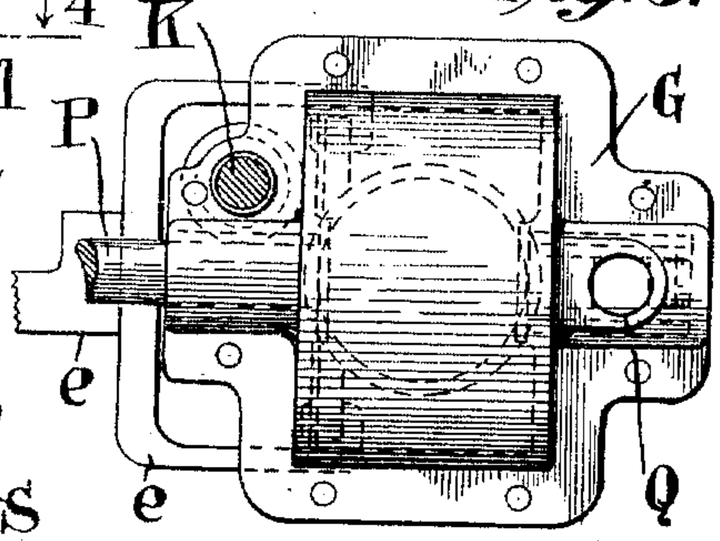
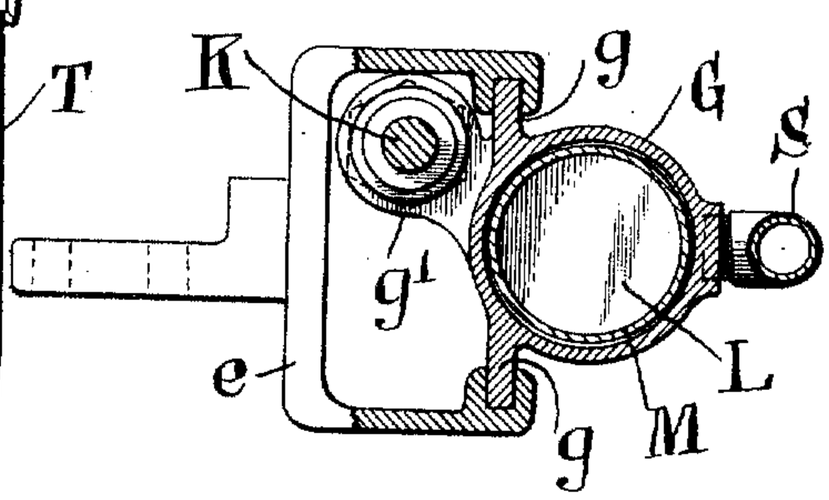


Fig. 4.



Attest:

E. Van Zandt

George Herbert Condict, Inventor:

by Bonney & Ogden

his Attys.

UNITED STATES PATENT OFFICE.

GEORGE HERBERT CONDICT, OF PLAINFIELD, NEW JERSEY, ASSIGNOR TO WILLIAM DULLES, OF NEW YORK, N. Y.

MACHINE FOR DRESSING OR SURFACING STONE AND OTHER USES.

990,425. Specification of Letters Patent. Patented Apr. 25, 1911.

Application filed July 11, 1908. Serial No. 443,142.

To all whom it may concern:

Be it known that I, GEORGE HERBERT CONDICT, of Plainfield, New Jersey, have invented certain new and useful Improvements in Machines for Dressing or Surfacing Stone and other Uses, of which the following is a specification, accompanied by drawings.

The invention is designed primarily as a machine for dressing or surfacing stone and other uses and it will be readily seen that many novel features of the invention are applicable alike to rock drills, riveting machines, hammers, etc.

In its most complete form the invention comprises a machine that is very reliable in operation, easy to handle, and readily adjustable to move the tool horizontally in any direction and to raise and lower it.

In the following description and claims the invention is set forth in its most preferred form as applicable to dressing or surfacing stone, and from this description and claims the various novel parts of the invention will be readily understood.

In the drawings, Figure 1 is a side elevation of a complete machine embodying the invention in a preferred form. Fig. 2 is a view partly in vertical section showing the casing and the reciprocating and rotary parts carried thereon for actuating the tool. Fig. 3 is a plan view below the plane 3—3 of Fig. 2. Fig. 4 is a horizontal section on the plane 4—4 of Fig. 2. Fig. 5 is a detailed vertical section on the plane 5—5 of Fig. 2.

In the drawings I have chosen to illustrate the mechanism as mounted upon a base or portable truck B and mast C which turns in a socket in the base B and supports the vertically adjustable carriage D. The carriage is adjustable vertically upon the mast by means of a rack-and-pinion, or in any other suitable way, the wheel *d*, and the pawl and ratchet illustrated serving to raise and lower the carriage D. Horizontally adjustable upon the carriage D is the supporting arm E carrying, preferably at one end, an electric motor F and at its other end the casing G. The arm E may run freely through the carriage D upon four or more rollers, as shown, thus providing for radial adjustment while the turning of the mast C provides for annular horizontal adjustment and the raising and lowering of the carriage for vertical adjustment. The motor is provided with a suitable electrical controller *f* at the end of the arm near the casing G and the tool proper H. The motor is, of course, supplied with current from any suitable source, the conductors not being illustrated.

In addition to the vertical adjustment afforded by the carriage D, the casing G is provided with a fine screw adjustment for raising and lowering it. The casing G is provided with slides *g* which travel in vertical ways in the jaws or bracket *e* at the end of the arm E. The casing G is adjustably supported by the screw-shaft K which is threaded through the sleeve *g'* on the side of the casing by means of suitable bushings, as indicated, and rests at its lower end in a bearing in the bracket *e*. The lower end of the casing G is closed by the head *g''* within which is loosely guided the shank of the surfacing tool H. The tool, which is a reciprocating tool, in contradistinction to rotating tools, is actuated by the hammer member L which reciprocates within a cylinder M, which latter is guided and reciprocated within the casing G. The upper end of the cylinder M is closed. Its walls surround and make air-tight contact with the piston portion *l* of the hammer L. The lower end of the hammer projects through an air-tight annular head in the lower end of the cylinder M. The air above and below the free flying piston *l* forms elastic cushions for reciprocating the hammer, as well understood in connection with rock drills. The cylinder M is reciprocated by the connecting rod O and crank shaft P, which latter has bearings in the closed upper portions of the casing G, as shown.

The upper end of the casing is completely inclosed and the reciprocation of the cylinder M tends to cause the alternate compression and rarefication of the air within it. The crank shaft is provided with a valve opening *p* and is drilled or bored from this opening *p* through to the interior of the casing so that the casing is in free communication with the valve opening *p*. This opening, which is preferably rectangular, opens alternately to an upper port Q in communication with pipe Q' and a lower port R in communication with a pipe or duct S that leads to the inclosed lower end of the casing G. The valve opening *p* should be of such size that when the cylinder M is at the upper end of its stroke, the valve opening is closed and stands as seen in Fig.

5. As the shaft turns and the cylinder begins to move downward, the valve opening *p* opens the port Q, allowing the cylinder M to draw air into the upper end of the casing through the pipe Q′. As the cylinder M approaches the lower end of its stroke, the port Q is closed, and as the cylinder begins its return stroke in the upward direction the valve opening *p* in turn communicates with the port R, allowing the air in the upper end of the casing to be forced through the pipe or duct S to the lower end of the casing. As the cylinder M again approaches its upper limit the port R is closed. During the up-stroke therefore, the air passes freely from the upper to the lower end of the casing. During the down-stroke air is sucked into the upper end of the casing, and the air compressed below the piston passes out through a duct or pipe T. This duct or pipe T is of lead or other suitable semi-flexible material, by which I mean that it is sufficiently inflexible to maintain its position during the operation of the apparatus yet is sufficiently flexible to be easily bent and adjustable by hand so as to direct the issuing blast or air at the particular angle desired to blow away the dust or chips formed by the tool.

It will be seen that I utilize the reciprocating parts of the mechanism to compress or pump air, and this pumping of the air may be utilized in several different ways. It may be used to blow away the dust, as explained. It also serves to maintain a mean pressure which is greater than atmospheric pressure in the lower end of the casing G and it thereby prevents the dust that is suspended in the atmosphere from being carried into the casing around the shank of the tool or otherwise, because, during the up-stroke, suction in the lower end of casing is either eliminated or greatly reduced by the air that is supplied through the pipe S, while during the down-stroke the port R is closed and the air is compressed and forced out from the lower end of the casing through the duct T and through any intervals where leakage occurs, as for example around the shank of the tool.

It will be seen that so far as blowing away the dust from the working end of the tool is concerned, the connection could be direct from the pipe S to the duct T, but this would not provide for the supply of relatively clean air to the lower end of the casing G, as described. The suction port Q and the pipe Q′ are utilized to draw air through the casing of the motor F, as indicated in Fig. 1, and as this air may be drawn in through the screen or netting *f′* through the casing of the motor at a point remote from the tool H, a relatively clean supply of air for the interior of the casing of the tool is assured.

The motor F drives the shaft P by means of the rotary flexible driving connection V which may comprise two universal joints *v* which provide for the vertical adjustment of the casing and tool relatively to the motor F and the arm E by means of the screw shaft K and its hand-wheel *k*. In order to get a maximum blow and maximum efficiency upon the tool, a vertical adjustment of the casing relatively to the working tool H while the machine is in operation is a great advantage. For very considerable vertical adjustment the machine may be stopped and the carriage D raised or lowered.

The operation of the machine described when used for dressing the stone is as follows: The machine having been moved to the proper position for acting upon the upper surface of the stone that is to be treated, the arm E is raised to the convenient height and drawn out and swung around as may be necessary to bring the tool to the proper position upon the work, whereupon the mechanism is started and the tool is adjusted to give the best effect by turning the hand-wheel *k*. The dirigible duct T being bent to properly direct the blast upon the work, the dressing action proceeds very rapidly and the operator moves the tool horizontally over the surface of the stone to reach its various portions. The hand-wheel adjustment not only enables the tool to be adjusted to give the best effect, but also permits it to be raised to attack high points upon the surface without necessitating the stopping of the machine to raise or lower the carriage D.

I have not described the details of the journal bearings or bushings such as are shown around the crank shaft P. These and many other matters of mechanical detail, and indeed the forms and proportions of the various parts illustrated and described may be widely varied without departing from the principles or mode of operation of the invention. At the lower end of the casing G I have shown a cushion W which may be of rubber or other yielding material to receive the blows of the hammer and prevent injury to the casing when the tool H is not in proper position to receive the blows of the hammer.

Various other details and additions will occur to the skilled mechanic or those familiar with the art and may be utilized without affecting the invention.

I claim and desire to protect the following:

1. Machine for dressing stone or other uses, comprising a casing, tool-actuating mechanism carried by the said casing and comprising a rotary shaft, a member reciprocating in the said casing and actuated by the said shaft, a hammer connected to be

actuated thereby and the tool actuated by the said hammer, a motor actuating the said shaft, an air conduit connecting the said motor with the said casing, the said shaft being provided with openings forming a valve controlling the passage of air through the said conduit, for substantially the purposes set forth.

2. Machine for dressing stone or other uses, comprising a casing, tool-actuating mechanism carried by the said casing and comprising a rotary shaft, a member reciprocating in the said casing and actuated by the said shaft, a hammer connected to be actuated thereby and the tool actuated by the said hammer, the said shaft having valve openings in communication with the interior of the casing, a conduit leading from the said valve to the lower or forward end of the casing, and a duct T leading from the casing to the proximity of the tool, for substantially the purposes set forth.

3. Machine for dressing stone or other uses, combining a rotary motor, reciprocating tool-actuating parts driven thereby, a casing within which such parts reciprocate, and an air duct connecting the motor and the said casing, whereby the reciprocation of the parts may draw air through the motor.

4. Machine for dressing stone or other uses, combining a rotary motor, reciprocating tool-actuating parts driven thereby, a casing within which such parts reciprocate, an air duct connecting the motor and the said casing, whereby the reciprocation of the parts may draw air through the motor, and a duct leading from the casing for directing a jet of air to the work.

5. Mechanism for dressing stone or other uses, having a casing, a reciprocating tool actuating member therein, a driving shaft connected therewith, a valve actuated therewith, and air connections therefrom connecting with the said casing for admitting air first to one end of the casing and thence to the other end.

6. Mechanism for dressing stone or other uses, having a casing, a cylinder reciprocating therein, a tool-actuating piston reciprocating within the cylinder, a shaft connected to reciprocate the cylinder, and valved pneumatic connections for the air compressed or pumped by the reciprocating action of the mechanism.

7. Mechanism for dressing stone or other uses, having a casing, a cylinder reciprocating therein, a tool-actuating piston reciprocating within the cylinder, a shaft, a crank and connecting rod inclosed within the casing, and valve-controlled connections for alternately admitting and delivering air to and from the inclosed space containing the crank and connecting rod.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses, June 25, 1908.

GEORGE HERBERT CONDICT.

Witnesses:
E. VAN ZANDT,
HERMAN MORRIS.